

Brief instructions on the communication connection of the MSS 3RK3 to the S7-1200 via AS-Interface

SIRIUS Safety

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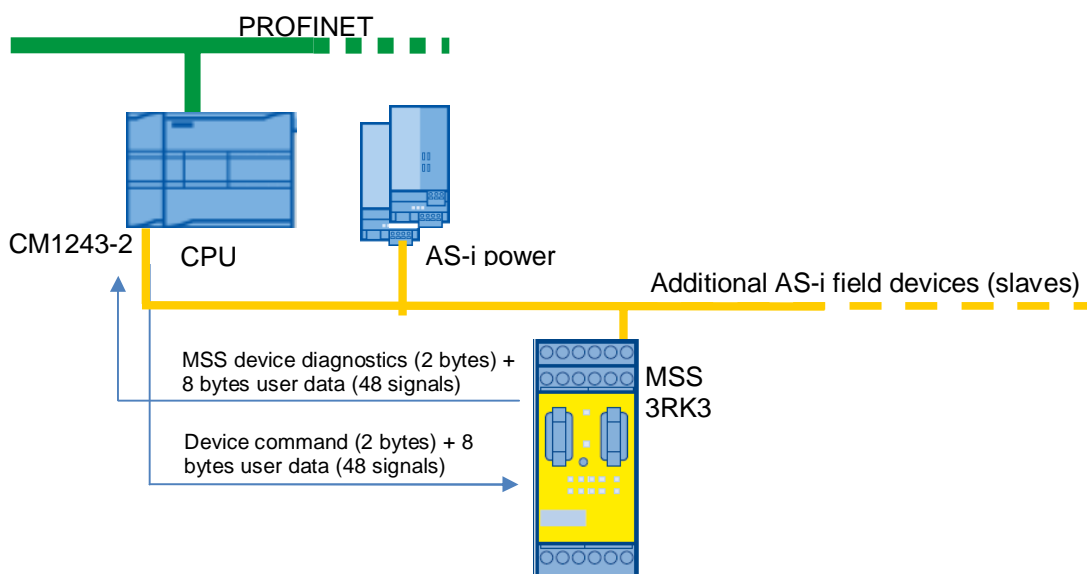
Question

How can I quickly and easily implement cyclic communication between the MSS 3RK3 and an S7-1200 via AS-Interface?

Reply

The AS-i slave profile "CTT2" gives you the option to exchange data between an AS-i controller (S7-1200) and an AS-i slave (MSS 3RK3). Data exchange can be performed in both directions. The communication connection takes place via an AS-i master (CM1243-2) that is inserted in the central part of the controller on the left of the S7-1200 CPU. The user data consist of 8 bytes each. Two of these bytes are pre-assigned with diagnostic and control data. The remaining six bytes can be freely assigned by the user. This means 48 signals can be sent by the MSS to the controller and can also be received. The new AS-i master S7-CM1243-2 offers the convenient option to provide the data to the process image of the S7-1200 controller. This means there is no need to read or write the data with system functions. This FAQ explains the parameter assignment and configuration of MSS 3RK3 and S7-1200.

For more detailed information on setting up CTT2 communication via system functions or with additional AS-i masters of the SIMATIC product family go to: <http://support.automation.siemens.com/WW/view/de/63112181>



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1 Parameter assignment of the MSS 3RK3 for cyclic data exchange by means of CTT2 slave

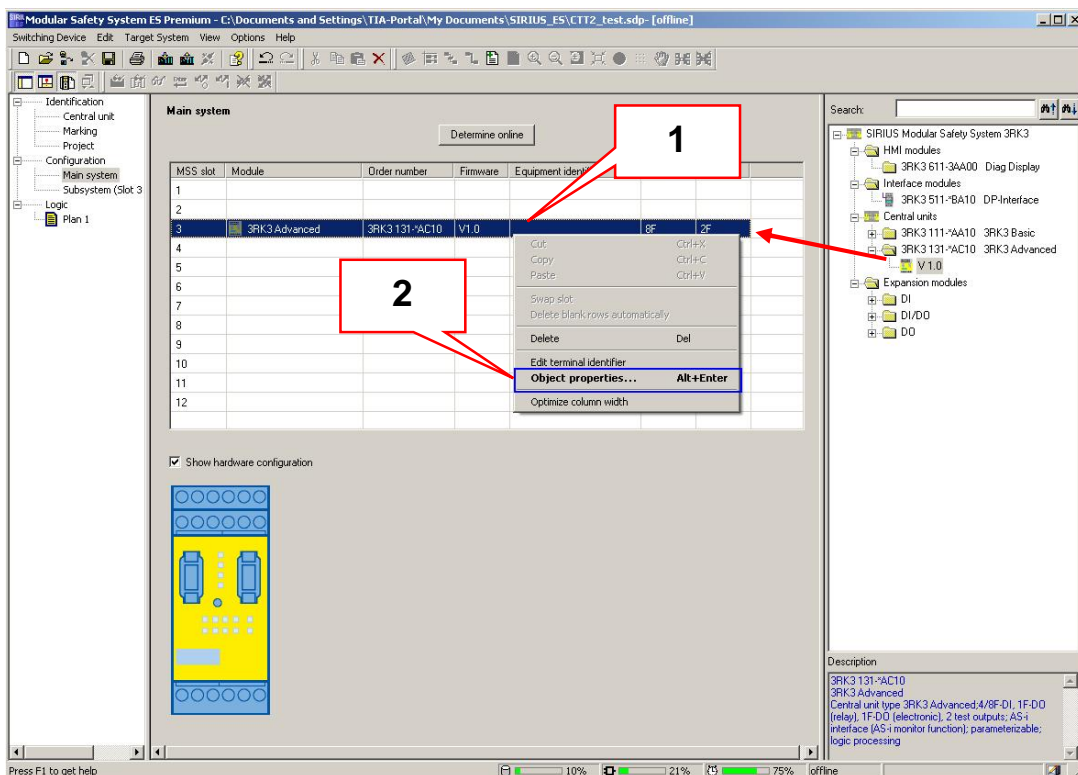
MSS 3RK3: Parameter assignment using the MSS 3RK3 Advanced central module as an example

Note The MSS ES software SP2 or later is required for parameter assignment of the 3RK3 MSS Advanced central module. Parameter assignment of the MSS ASIsafe is identical and is supported as of SP3.

1.1 Setup and interconnection of the CTT2 slave in the MSS 3RK3

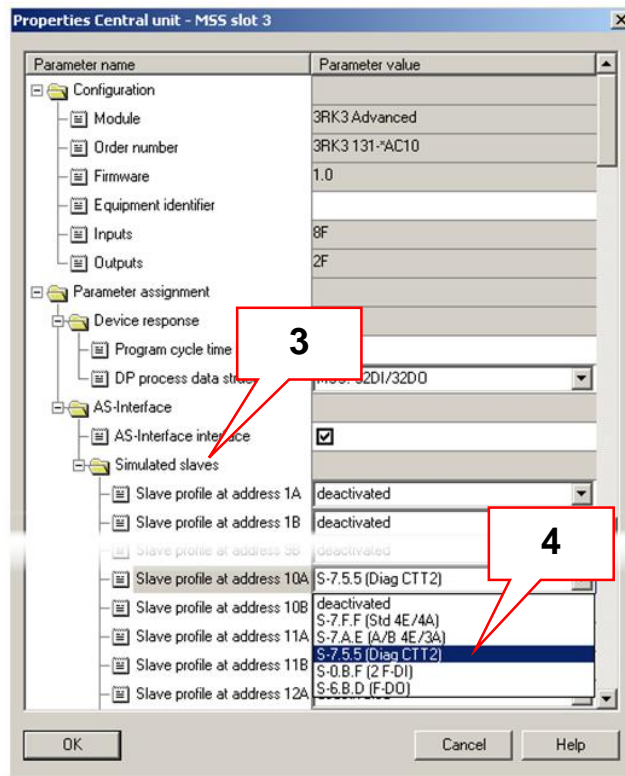
Procedure:

1. Add the MSS 3RK3 from the catalog to the configuration (slot 3).
2. Open the object properties of the module with a right-click in line 3.



1 Parameter assignment of the MSS 3RK3 for cyclic data exchange by means of CTT2 slave

3. In the properties window, scroll to the parameter "Simulated slaves".
4. Assign a slave profile with "DiagCTT2".
("DiagCTT2" at AS-i address 10 was selected in the example)

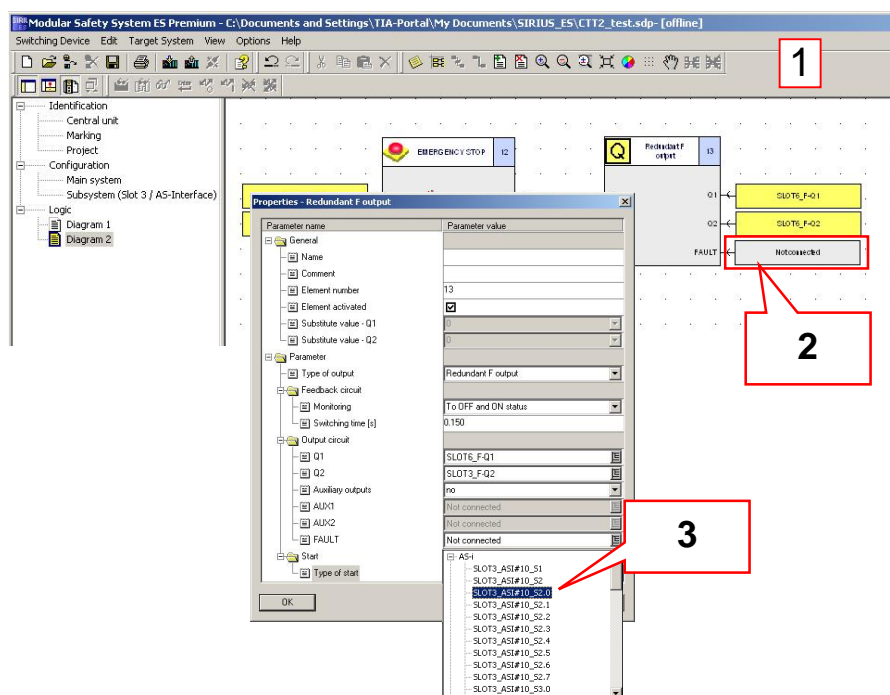


The MSS (simulated CTT2 slave) occupies address #10 on the AS-i bus. The message and control data can now be exchanged cyclically between the MSS 3RK3 and the S7-1200 controller.

1.2 Parameter assignment of freely interconnectable signals in MSS ES 2008

Procedure:

1. Open the MSS ES 2008 software.
2. Double-click the signal you want to interconnect.
3. Interconnect the signal with an AS-i signal of the simulated CTT2 slave (SLOT3_ASI#10_S2.0).



Up to 48 freely interconnectable signals can be used (6 bytes). The freely interconnectable signals can be used as input or output signals.

Note

The same procedure is required to transfer standard data from the PLC to the MSS 3RK3. Data exchange takes place by means of the output signals (e.g., SLOT3_ASI#10_Q2.0) of the simulated CTT2 slave. These are interconnectable in the MSS logic diagram by means of input cells.

2 Configuration of the CM1243-2 in Step 7 Professional V12 (TIA Portal)

The AS-i master CM1243-2 gives you the option to display analog slaves (and thus CTT2 slaves) by means of the process image. The slaves must be configured in the hardware configuration for this purpose. The CM1243-2 creates 8 bytes input data and 8 bytes output data for the simulated CTT2 slave of the MSS 3RK3 by means of the transparent I/O addresses. These data can be interconnected directly in the control program.

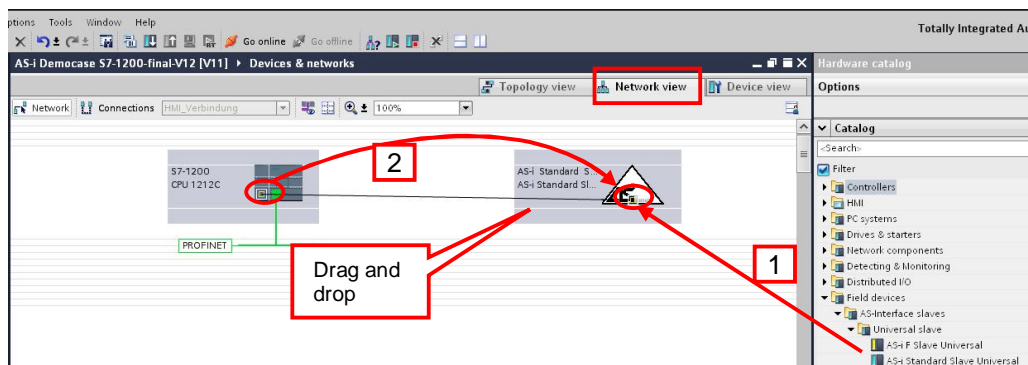
2.1 Configuration of the AS-i bus system

In Step 7 Professional, the AS-i network is configured below the AS-i master CM1243-2. The CM 1243-2 is taken from the hardware catalog in the device view like any other module and inserted in the rack of the S7-1200 station to the left of the CPU at the provided slot. Once you have inserted the CM1243-2, the AS-i slaves have not been configured yet. Configuration of the AS-i slaves can be done as follows.

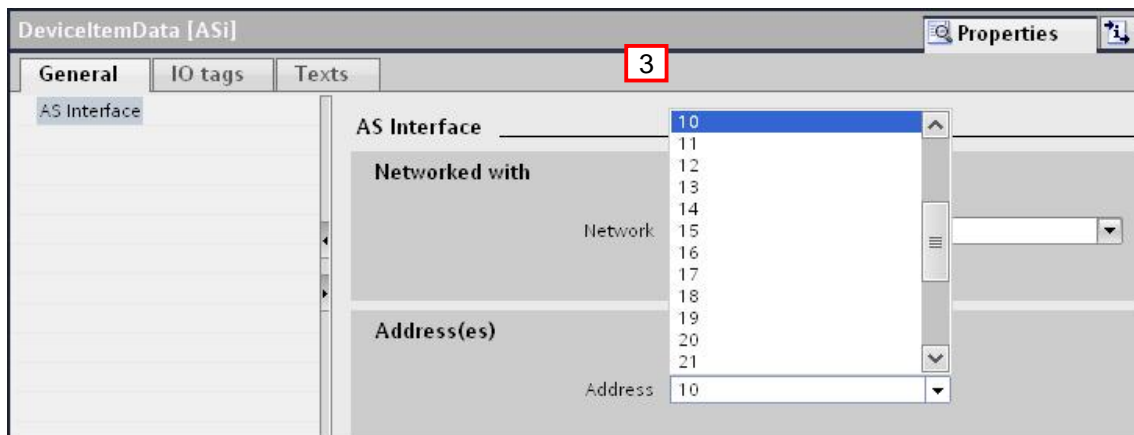
The slaves are configured in the network view of the TIA Portal.

Procedure:

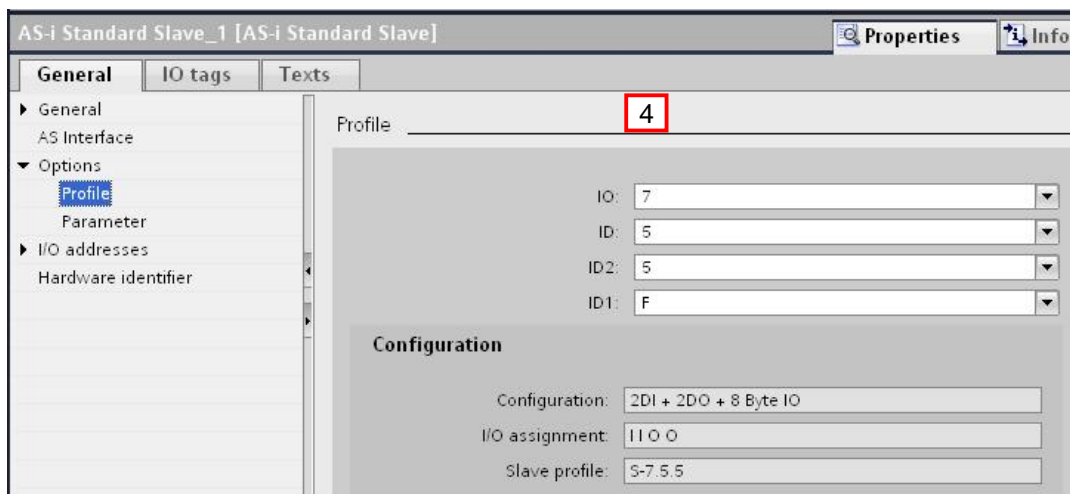
1. Insert an "AS-i Standard Slave Universal" from the device catalog in the work window.
2. Connect the universal slave to the AS-i interface of the CM1243-2 by dragging a connection from the yellow interface symbol on the AS-i master to the interface symbol of the slave.



- Specify the AS-i address of the universal standard slave (here address 10).
To do so, select the slave in the network view. You will find the drop-down menu for address assignment in the Properties view on the "AS Interface" tab.



- The parameters of the universal slave profile must be assigned so that it corresponds to the slave type "CTT2". To do so, open the "Options" menu and select the "Profile" tab. Set the IO/IDs according to the following illustration.



- Save the configuration and download it to the controller.

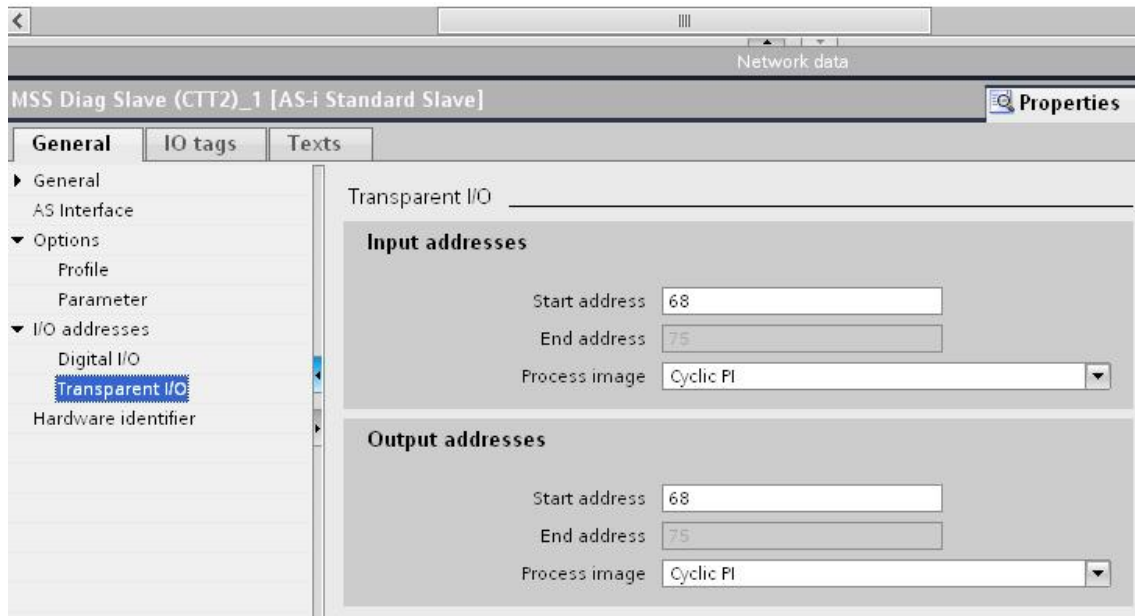
Note

The basic configuration of the CM as well as other settings are described in the respective manual of the CP. The following link is available for the AS-i CM 1243-2 used here:

<http://support.automation.siemens.com/WW/view/de/57358958>

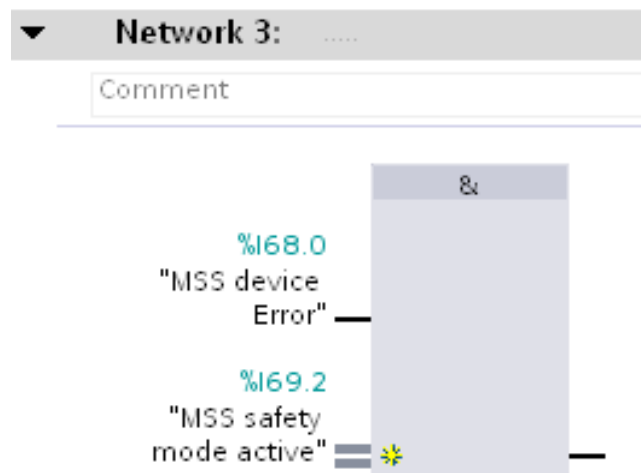
2.2 Access via the process image

You can find the address area in the properties of the configured AS-i slave (here address 10).



You can access the MSS system diagnostics with the input address bytes 68 and 69. Input bytes 70-75 are the user-defined signals that can be freely interconnected in the MSS logic.

The same procedure applies to the output addresses for sending control data from the S7-1200 to the MSS.



Note

The area of the transparent process image depends on the system specification of the TIA Portal. Users can change the input and output address areas at a later time.

3 Structure of CTT2 data record

Diagnostic data of the MSS 3RK3

Diagnostic data
(2 bytes)

Freely
interconnectable
signals (6 bytes)

Byte	Prozessdatenblock "Gerätediagnose"		Bemerkung
	Bezeichnung	DS92	
0 ⁰	Gerätefehler	12 ⁰ : Gerätefehler	Gerätediagnosemeldungen Bit=[0]: Meldung nicht gesetzt Bit=[1]: Meldung gesetzt
0 ¹	Sammelfehler	12 ¹ : Sammfefehler	
0 ²	Busfehler	12 ² : Busfehler	
0 ³	Sammelwarnung	12 ³ : Sammelwarnung	
0 ⁴	Sammelvorwarnung	12 ⁴ : Sammelvorwarnung	
0 ⁵	SOLL#IST	Veroderung von: 22 ⁵ : SOLL#IST-Konfiguration 22 ⁶ : SOLL#IST-Slotausbau 22 ⁷ : SOLL#IST-Subslotausbau	
0 ⁶	Sammelfehler Codetabellen / -folgen	Veroderung von: 49 ⁰ : Codetabellen fehlen 49 ¹ : Codetabellen mehrfach 49 ² : 8x4Bit-Codfolgenfehler 51 ⁰ : 7x4Bit-Codfolgenfehler	
0 ⁷	reserviert = 0	[0]: fix	
1 ⁰	Projektierungsbetrieb aktiv	14 ⁰ : Projektierungsbetrieb aktiv	
1 ¹	Testbetrieb aktiv	14 ¹ : Testbetrieb aktiv	
1 ²	Schutzbetrieb aktiv	14 ² : Schutzbetrieb aktiv	
1 ³	Anwenderprogramm läuft	14 ³ : Anwenderprogramm läuft	
1 ⁴ ... 1 ⁷	reserviert = 0	[0]: fix	
2 ⁰ ... 7 ⁷	SLOT3_ASI#xx-S2.0 SLOT3_ASI#xx-S7.7	-	

Control data of the MSS 3RK3

Control command
"Reset"
reserved

Freely
interconnectable
signals (6 bytes)

Byte	Prozessdatenblock "Steuerdaten Gerät"		Bemerkung
	Bezeichnung	Beschreibung	
0 ⁰	Reset	[->]: Bei pos. Flanke 0 -> 1 wird das Kommando einmalig ausgeführt. [0,1]:konstanter Wert: bewirkt keine Kommandobearbeitung	Gerätekommandos
0 ¹ ... 1 ⁷	reserviert=0	[0]: fix	
2 ⁰ ... 7 ⁷	SLOT3_ASI#xx-Q2.0 SLOT3_ASI#xx-Q7.7	-	Masteraufruf (CTT2-Protokoll) von AS-i- Master an den simulierten nicht sicheren AS-i Slave (CTT2) des MSS 3RK3

4 Contact person/Support

Siemens AG

Technical Assistance

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